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(54) **CATALYSTS AND PROCESS FOR HYDROGENOLYSIS OF SUGAR ALCOHOLS TO POLYOLS**

(75) Inventors: **Shubham P. Chopade**, East Lansing; **Dennis J. Miller**, Okemos; **James E. Jackson**, Haslett, all of MI (US); **Todd A. Werpy**, West Richland, WA (US); **John G. Frye, Jr.**; **Alan H. Zacher**, both of Richland, WA (US)

(73) Assignees: **Board of Trustees operating Michigan State University**, East Lansing, MI (US); **Battelle Memorial Institute, Pacific Northwest Laboratory**, Richland, WA (US)

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Primary Examiner—Johann Richter
Assistant Examiner—Brian J. Davis
(74) *Attorney, Agent, or Firm*—Ian C. McLeod

(57) **ABSTRACT**

The present invention provides a process for preparation of low molecular weight polyols from high molecular weight polyols in a hydrogenolysis reaction under elevated temperature and hydrogen pressure. The process comprises providing in a reaction mixture the polyols, a base, and a metal catalyst prepared by depositing a transition metal salt on an inert support, reducing the metal salt to the metal with hydrogen, and passivating the metal with oxygen, and wherein the catalyst is reduced with hydrogen prior to the reaction. In particular, the process provides for the preparation of glycerol, propylene glycol, and ethylene glycol from sugar alcohols such as sorbitol or xylitol. In a preferred process, the metal catalyst comprises ruthenium which is deposited on an alumina, titania, or carbon support, and the dispersion of the ruthenium on the support increases during the hydrogenolysis reaction.

23 Claims, 3 Drawing Sheets